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An Evaluation of The Influence of Computer-Mediated Communication on Motivation, Visualization of the Self, Learning Experience, and Self-Efficacy in Deaf Students Learning English as a Second Language

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An Evaluation of The Influence of Computer-Mediated Communication on Motivation, Visualization of the Self, Learning Experience, and Self-Efficacy in Deaf Students Learning English as a Second Language

by

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An Evaluation of The Influence of Computer-Mediated Communication on Motivation, Visualization of the Self, Learning Experience, and Self-Efficacy in Deaf Students Learning English as a Second Language

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Computer-mediated communication (CMC) has been shown to facilitate positive outcomes in language learning environments, including greater motivation, positive attitudes, and increased interactive quantity and quality of language use. This study posits that CMC can serve as an affordance that allows for increased opportunities for deaf students to engage in direct, collaborative learning and meaningful interaction in English that then allows for increased motivation, improved visualizations of the self, attitudes, and self-efficacy in English language learning. Changes in these outcomes due to the intervention of CMC in college English classes designed for the deaf student will be assessed with pre- and post-tests, using hierarchical linear modeling as a statistical methodology to capture class effects. Qualitative analyses will also capture greater levels of complexity in instructor and student experiences with CMC through interviews, observations, and transcript analysis. This report also includes an evaluation plan with an outline of the essential program components, a logic model, and analysis plan based on stakeholder questions.

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Chapter 1

Introduction

Researchers working in the field of deaf education are incessantly bombarded with dire statistics. The failure of the deaf education system has been cited numerous times by researchers and federal commissions (i.e., Commission on Education of the Deaf, 1988; Johnson, Liddell, & Erting, 1989). Deaf students continue to struggle with print literacy, with 50% of 18-year-olds in the United States reading at the fourth-grade level or lower (Traxler, 2000). More recent reports show that deaf students score below basic levels on the Stanford Achievement Test (Qi & Mitchell, 2007) and that only 25% of students enrolled in postsecondary educational programs actually graduate (Marschark, Sapere, Convertino, & Pelz, 2008). Those are just a sampling of the statistics that initiate much of the dialogue surrounding the current state of deaf education, and give a sense of urgency to the research work aimed at strengthening the field.

Deaf students' challenges are more apparent when we examine the area of English literacy in particular. Generally, research suggests that most students with severe to profound hearing impairment do not read English text as well as their hearing counterparts upon graduation from high school (Allen, 1986; Paul, 2003; Schirmer & McGough, 2005; Traxler, 2000). Two persistent general patterns are found in literacy research, as reported by Trezek (2010) in a discussion on reading achievement for deaf students: "average 18- to 19- year old students with severe to profound hearing impairment are reading no better than average 9- to 10- year old hearing students, and there seems to be an annual growth rate of less than a half grade per year with a leveling off or plateau effect occurring at the third- or fourth- grade level for most students" (p. 7).

Deaf students' inadequate functional literacy levels for reading and writing continue to be an impediment for career preparation, technical skills development, and collegiate success (Marschark, Lang, & Albertini, 2002).

Many of the findings presented above derive from the unique challenges faced by the deaf student in the area of language and literacy. Language, after all, is the channel through which learning happens in the educational system. The nature of deafness presents an impediment to acquisition of the spoken language in the hearing environment and thus interferes with literacy development in that language, in the majority of situations, as will be explicated further in the literature review.

However important it is to acknowledge how the experience of being deaf may impede, or, more precisely, *interact*, with language acquisition, it needs to be recognized that much of the research in literacy and deaf students has taken place from a deficit perspective, with the idea that deaf individuals should be measured against native users of English. In such comparisons, deaf individuals have been found lacking. It is time to move beyond viewing deaf individuals as "should-be" native users of English and to ask about the broader experience those deaf individuals may have when engaging with English. After all, language encompasses many complex dimensions: cognitive, psychological, and social. A narrow lens of literacy that only allows for a pen and paper measurement of language proficiency to equalize achievement outcomes does not capture the complexity involved with engaging with a particular language. My study attempts to investigate this broader, more complex context for the experiences deaf individuals have when engaging with the English language.

Viewing the deaf learner's English language learning through a second language

acquisition lens as suggested by previous researchers (i.e., Antia, Reed, & Kreimeyer, 2005) allows us to capitalize on the dense research base that addresses the complexity in acquiring, learning, and using a second language. It has become clear that acquiring a second language is not as simple as making it accessible and available (Genesee, 1987; Harley, 1994; Swain, 1984) or ensuring sufficient opportunities to express oneself in the language (Swain, 2006). The actual process of second language acquisition is much more complex than simply making the language available, and the socioconstructivist framework allows for this complexity, bringing attention to social factors that may help or hinder language acquisition and to collaborative learning and meaningful interaction as essential components in successful learning (Lantolf, 2000; Swain 1995, 2000).

As Salomon and Perkins (1998) stated, a socioconstructivist framework emphasizes that "knowledge, understandings, and meanings gradually emerge through interaction and become distributed among those interacting rather than individually constructed or possessed" (p. 9). The learning of a language necessitates this active interaction, as it is not only the negotiation of meaning that is enhanced through interactional exchanges, but also the development of second language proficiency (Long, 1996). For many language learners, this seems to be obvious and easily accomplished through active engagement with users of the target language. However, for deaf learners of a language, the playing field is different. The experience of engaging with English for the deaf person who does not utilize audition to enter conversational discourse is most often one-dimensional: that of reading or writing text. How can direct, meaningful interaction in the target language happen for the deaf language learner who uses a different language modality to engage in the language, that of written text?

Deaf learners have historically faced struggles in engaging in direct, collaborative learning and meaningful interaction in educational settings (Antia, 1985; Garrison, Long, & Stinson, 1994; Foster, Long, & Snell, 1999; Long & Beil, 2005; Saur, Popp-Stone, & Hurley-Lawrence, 1987; Stinson, Liu, Saur, & Long, 1996). The challenges to collaborative learning and meaningful interaction that deaf learners encounter are not limited to settings where directed language learning happens, but include a wide range of environments where the learning contexts differ. Yet, the acknowledgement that direct, active engagement in learning environments for deaf students is not effortlessly achieved is important to make.

For deaf students, the usual accommodations that are offered in non-separate classrooms, such as ASL interpreters and CART transcribing, lack the clarity and immediacy of direct communication (Foster, Long, & Snell, 1999; Long & Beil, 2005). The barrier faced when direct communication is not available often makes group participation difficult for the deaf student, even with an interpreter (Antia, 1985; Garrison, Long & Stinson, 1994; Saur, Popp-Stone, & Hurley-Lawrence, 1987; Stinson, Liu, Saur, & Long, 1996). Without engaged, active responsiveness, deaf students are not likely to remain active participants, neither engaging directly with speakers of the language, nor participating in the negotiation of meaning using the language from an interactionist perspective.

Indeed, in a study of continuing education training to deaf adult professionals, Long and Beil (2005) found that the courses taught by hearing instructors, with appropriate accommodations provided, created unequal access to communication. The deaf students asked fewer questions, did not feel confident about their understanding of

the material, and did not feel a part of the class setting. Long and Beil contrasted these findings with results from direct instruction workshops provided by teachers who signed and were sensitive to the pace of instruction required. In those settings, "participants felt free to ask questions and were engaged, active learners…learned from each other…led to sharing of information" (p. 10).

The studies discussed above refer to settings in which deaf and hearing students or instructors interact in the same classroom, and describe the difficulties therein in discourse community building where engaged, interactive learning ideally occurs. It is important to consider that the deaf student is in a second language setting in the above studies, engaging with English speakers while using ASL. In the study I am proposing, I am interested in interactive language learning through direct engagement with English as the target language, not necessarily with English speakers, but with fellow ASL users. This direct engagement with English can be achieved through the written text modality, utilizing technological affordances that computers and other tools enable.

In this study, I propose that synchronous computer-mediated communication (CMC) can be used as a technological affordance that increases opportunities for deaf students to engage in direct, collaborative learning and meaningful interaction in English. Studies have shown that CMC shares characteristics with face-to-face conversation, among numerous other benefits, which is beneficial from an interactionist perspective of language acquisition (Murray, 2000; Smith, 2003; Sotillo, 2000). The most robust finding in CMC research in second language learning, and other settings, is that CMC encourages increased quantity and quality of L2 production (i.e., Beauvois, 1992, 1995, 1998; Chapelle, 1994; Chun, 1994; Kelm, 1992, Kern, 1995, Warschauer, 1996). Of particular

importance when considering the population of interest in this study, are findings that indicate that students talk more, and have higher quality conversations, especially those students who may talk less in the classroom due to the impact of personality, cultural traits, gender, power, language proficiency, and socioeconomic roles (i.e., Kitade, 2000; McGuire, Kiesler, & Siegel, 1987; Tan, Wigglesworth, & Storch, 2010).

It is apparent that using CMC in the classroom creates potential spaces where greater interactive engagement with the target language can happen, especially for those students who may be otherwise reluctant to participate in classroom discussions in the target language. The overarching point of interest for my study is what occurs when deaf individuals are able to have greater interactive, direct engagement with English in an ongoing manner in a language learning environment.

Although the possible outcomes of interest of such a study are many, outcomes of English language proficiency are not the foci of interest in this study, for two reasons. First, the timeframe of my study (one semester) may not be sufficient to discern clear differences in outcomes of language proficiency. In particular, when considering the population of interest in my study, adult students who do not possess the English skills to enroll in transferable college-level coursework, noticeable improvements in language proficiency outcomes in short timeframes are rare (Bochner & Walter, 2005). Second, outcomes of language proficiency that are measured with direct assessments of English literacy are problematic for the deaf learner (i.e., Martin & Mounty, 2005). Standardized assessments of language proficiency assume that the test takers have a certain level of proficiency in the target language, which is not always the situation for deaf individuals. Specific issues that may be confounding assessment results for deaf individuals aside

from deficiencies in language proficiency are those of item bias, cultural difference, figurative or colloquial language, linguistic difficulty, test validity, and test reliability (Martin & Mounty, 2005). Rather, I am exploring the psychological experiences of deaf individuals' engaging with English as outcomes of interest, focusing on variables that have previously been shown to be mediators of language proficiency.

Psychological experience is a broad umbrella term under which attention will be paid to specific dimensions that are particularly relevant when considering essential psychological factors involved in learning and using a second language. This study will be examining some general areas of psychological experiences: that of motivation, attitudes, and beliefs about the self. Beliefs about the self will be explored through two different frameworks, self-efficacy theory (Bandura, 1977) and the L2 motivational self system in which motivation is conceptualized within a "self" framework (Dörnyei, 2005, 2009a). I will be drawing from dynamic systems theory (de Bot, 2007; Larsen-Freeman, 2002) in an attempt to capture the complexity involved in learning and using language, and combine the cognitive and social motivational perspectives that self-efficacy theory and the L2 motivational self system allow, in a mixed method approach using multilevel modeling.

Research findings support my premise that increased engagement with the target language through CMC will influence motivation, beliefs about the self, and attitudes toward language learning. Second language learning settings that incorporate CMC have resulted in increased motivation (Beauvois, 1992, 1997, 1998; Kelm, 1992; Kern, 1995). Studies of language learning using virtual environments and specific tools show that students' self-efficacy in language learning is malleable, and has been shown to increase

(Chularut & deBacker, 2004; Zheng, Young, Brewer, & Wagner, 2009). Other settings that use computer-assisted language learning show that attitudes towards learning language are also malleable (Cai, 2011; Csizér et al., 2010).

This study posits that CMC can serve as an affordance that allows for increased opportunities for deaf students to engage in direct, collaborative learning and meaningful interaction in English that then allows for increased motivation, improved visualizations of the self, attitudes, and self-efficacy in English language learning. My research questions ask about the degree of influence that participating in CMC will have on deaf learners' L2 motivational self system, self-efficacy beliefs, and motivated behaviors in engaging with English. I am also exploring what is the nature of students' experience in terms of motivational, attitudinal, and identity issues when engaged in a class that makes use of computer mediated communication. Following the review of relevant literature I present in the next chapter, I will delineate my research questions and hypotheses more precisely in Chapter 3 where I describe the details of the methods I will use to gather data. In Chapter 4, I will provide a perspective from program evaluation and set up a theoretical framework using an evaluation approach. This framework will lay the grounds for a breakdown of the components of this program, as shown in Chapter 5, and addressing stakeholder questions in addition to my research questions, as demonstrated in Chapter 6.

Chapter 2

Literature Review

In this literature review, I begin with providing background on literacy and the deaf, discussing pertinent issues and patterns found in this population. This background will provide rationale for the use of a second language acquisition framework to discuss specific issues that influence language acquisition for the deaf learner. The next section reviews the literature on synchronous computer-mediated communication (CMC) as it is used in language learning settings, and discusses the benefits of CMC in those settings, particularly how CMC can be used to enable direct, interactive classroom discussion using English, and the benefits thereof. To bring in the psychological experiences of second language learning, especially those that may be influenced by the interactive discussion that is enabled by CMC, I move to a discussion of motivation and beliefs of the self as applicable to second language learning. In this section, I first provide a background of motivational research in second language learning, then move to a discussion of two theoretical approaches to motivation: the L2 Motivational Self System and self-efficacy. I conclude the literature review with a section that discusses language learning within a dynamic systems theory framework that will allow me to capture the complexity involved with language learning for deaf individuals.

Language Acquisition, Literacy, and the Deaf

The possible reasons for deaf students' low achievement levels are complex, and are not within the scope of this paper to cover in detail. However, with a focus on literacy challenges, the unique linguistic situation of deaf individuals is an important

consideration. Severe to profound prelingual hearing loss obviously impedes natural, incidental acquisition of the language spoken in deaf children's surroundings. Spoken language is of emphasis here, as this is of interest when considering English literacy, because written English used a code that represents the sounds of words.

The deaf learner, however, is able to experience natural, incidental language acquisition through visual, signed languages when these languages are available and accessible. In America, the signed language of the deaf community is American Sign Language (ASL). Deaf children born to deaf parents are in a setting that allows for natural language acquisition through the constant exposure to accessible language and incidental language learning, but this population makes up less than 10% of deaf children, and closer to 4.4%, according to the latest numbers (Mitchell & Karchmer, 2002). It needs to be acknowledged that for the approximately 92% of deaf children born to hearing parents (Mitchell & Karchmer, 2002), there is minimal, if any, natural language acquisition at all happening in their early years.

Even when the setting allows for natural language acquisition and use of ASL, the path towards successful literacy for the deaf learner is not clear. By nature of the unique modalities of ASL and English, deaf individuals are expected to be continually bilingual, and this is inherently complex when considering future literacy outcomes. Kraskow and Hanson (1985) helped explicate this challenge below:

> … the use of ASL and of written or fingerspelled English by deaf bilinguals is quite different from the use of spoken languages by hearing bilinguals. For a deaf person, learning the orthography of English means learning an orthographic visual system derived from a primary form to which he or she

> does not have normal access. In contrast, hearing bilinguals do have normal access to the primary forms of both languages that they use. Moreover, the significant structural differences between ASL and English at the lexical and grammatical levels require the ASL-English bilingual to know two radically different forms of linguistic structuring. (p. 266)

Theories and approaches to counteracting this lack of access to language, generally, and more specifically, to English language, abound. Yet, there is limited, but most often, no strong evidence of efficacy of any one approach to English literacy development for deaf individuals. Luckner, Sebald, Young, and Muir (2005) conducted a thorough analysis of literacy research in deaf education. The research team initially collected and reviewed 964 articles, with only 22 meeting the selection criteria: being published in a peer reviewed journal between 1963 and 2003, having deaf participants between 3 and 21 years, utilizing the necessary statistical information, and having a control group. Such few numbers is unfortunate and reveals a serious paucity in strong empirical research in deaf education. In this comprehensive review of 40 years of literacy research, Luckner et al. concluded by suggesting that "the field of deaf education does not have what the U.S. Department of Education, (2003, pp.10-11) refers to as 'strong evidence of effectiveness' or even 'possible evidence of effectiveness' about any specific educational intervention for promoting the literacy development of students who are deaf or hard of hearing" (2005, p. 452).

Because deaf students' challenges with English reading and writing share similar traits to other English language learners (Antia, Reed, & Kreimeyer, 2005), a theoretical

framework of second language acquisition will be beneficial in examining instructional approaches designed to increase language proficiency and literacy outcomes.

Second Language Acquisition and the Deaf Learner

In second language acquisition theory, it is traditionally thought that language input is the most important determinant of language competence (Krashen, 1985). In this framework, the deaf student obviously lacks accessible, consistent input in English until some level of reading competence is achieved or the auditory channel is accessible through technological aids. However, input alone is not sufficient to achieve high levels of proficiency in a second language, as has been shown in research on immersion programs (Genesee, 1987; Harley, 1994; Swain, 1984). Swain (1985, 1993) and Swain and Lapkin (1995) argued that output in the second language is actually the essential component that triggers the cognitive processes needed for successful second language learning. In contrast to Krashen's Input Hypothesis, Swain proposed the Output Hypothesis, identifying explicit processes that occur when the L2 is produced, triggered by the noticing of linguistic problems, or gaps in understanding, that will push the learner to modify the L2 output. Pica (1989) asserted that when learners actively modify output, they "test hypotheses about the second language, experiment with new structures and forms, and expand and explore their interlanguage resources in creative ways" (p. 64).

However, the current discourse in language learning has moved beyond a simplistic focus on the input/output conundrum. With his discussion of *languaging,* Swain's (2006) more current work has shifted from a conduit metaphor, as in language serving as a mere conveyor of meaning, toward a more activity-based network. Swain defined *languaging* as a "process of making meaning and shaping knowledge and

experience through language" (p. 98). The concept of languaging is closely related to the interactionist perspective on second language acquisition, which was updated by Long in 1996 and expanded on the Output Hypothesis. In his most recent version of the Interaction Hypothesis theory, Long (1996) posited that interactional exchanges that promote negotiation of meaning allow for development of second language proficiency. The role of output is also significant in this interactionist perspective, in that the learner is engaged in an interactional relationship between continually modified input and output. In this process, learners notice input features and compare them with their own output, a necessary step to transforming input into intake (Schmidt 1990, 1994, 1995). From a review of research on negotiation of meaning and second language acquisition, Pica (1994) concluded that "negotiation contributes to conditions, processes, and outcomes of L2 learning by facilitating learners' comprehension and structural segmentation of L2 input, access to lexical form and meaning, and production of modified output" (p. 493).

Research on second language acquisition from a sociocultural framework, drawing from the work of Vygotsky (1978), provides a theoretical perspective of the importance found in this interactional relationship between input and output, the negotiation of meaning that Swain (2006) defined as languaging, when language is the tool of choice in this negotiation. Vygotsky's general genetic law of cultural development allows us to perceive knowledge construction as continually negotiated between the interpsychological and intrapsychological planes, constructing meaning through internal and external models. Languaging is an important part of this process, viewing language as a tool that allows inner thought to become external ideas to be communicated with others and those external ideas to then become internal cognitive activity. For deaf

students, the process of learning English through reading, writing, or the use of accommodations such as ASL interpreters, without the direct interactional experience that conversational dialogue allows, may not be sufficient for authentic language acquisition.

Historically, attempts to address the fact that deaf students are not always able to access the target language in a direct, interactional, accessible manner have often focused on utilizing the auditory channels through focused speech and listening training or technological advances such as hearing aids, amplification devices, and cochlear implants. These interventions are not effective for all deaf individuals, and if they are effective, it is arguable whether or not they provide full, equitable access to language. Instead of using technological interventions to provide auditory access to the target language, I am proposing that technological interventions can be used to provide equitable, direct access to the target language in other modalities: namely, that of text.

Computer-Mediated Communication and Language Acquisition

Broadly, there are two ways that computers can be used to enable conversational dialogue in the target language in language learning classroom settings: asynchronous (e.g., discussion boards, e-mail) and synchronous communication (real-time discussion over local area networks). Synchronous computer-mediated communication (CMC) can be used inside and outside of the physical classroom, using a variety of software programs allowing for immediate, real-time dialogue in text. I am interested in the use of synchronous CMC in my study, as a potential affordance allowing for interactive, real-time dialogue in English text. Interestingly, synchronous computer mediated communication was first used in language instruction at Gallaudet University, the world's

only liberal arts university for deaf students, in the mid 1980s, where it was used as a tool to help deaf individuals communicate in English (Beauvois, 1997).

Research has shown that synchronous computer-mediated communication (CMC) has similar characteristics with face-to-face conversations that have been argued to be necessary for second language acquisition, and have been problematic for the deaf learner who is unable to engage in conversational interactions via spoken English. In particular, the quantity and types of discourse functions used in synchronous discussions (Sotillo, 2000) were found to be similar to interactional modifications that are endemic to face-to-face conversations and support second language acquisition. From an interactionist perspective, the similarity of CMC to face-to-face discussion is considered to be beneficial (Murray, 2000; Smith, 2003).

Computer-mediated discussion can promote the type of specific interactional features in the negotiation of meaning that facilitates L2 development, according to second language acquisition theories (Blake, 2000; Kitade, 2000; Lee, 2001; Pellettieri, 1999; Salaberry, 2000; Smith 2003). Kitade (2000) pointed out three specific features of synchronous CMC, in particular, that create opportunities for L2 development: there is no turn taking, the interaction is text-based, and non-verbal cues are reduced. A recent study comparing face-to-face communication with synchronous communication in a beginner Chinese class found that CMC allowed for greater collaborative dyadic interaction patterns, showing greatest benefit, in particular, for the ESL members of the pair (Tan, Wigglesworth, & Storch, 2010).

Several studies on synchronous computer-mediated communication have shown numerous positive benefits for the second language learner (Abrams, 2003; Beauvois,

1992, 1995, 1998; Blake, 2000; Chapelle, 1997, 1998; Chun, 1994; Kelm, 1992; Kern, 1995; Pellettieri, 1999; Salaberry, 1996, 1999; Warschauer, 1996, 1997). Specific benefits include reading and writing outcomes (Sullivan & Pratt, 1996), increased L2 discourse functions (Chun, 1994; Herring, 1996; Kern, 1995), greater L2 syntactic and lexical complexity (Kern, 1995; Warschauer, 1996), equalization of student/teacher roles (Beauvois, 1998; Kern, 1995), conversational communication skills (Chun, 1994; Kitade, 2000), morphosynactic development (Pellettieri, 1999; Salaberry, 2000), improved motivation (Beauvois, 1992, 1997, 1998; Kelm, 1992; Kern, 1995), and reduction of communication anxieties (Kern, 1995).

In particular, the most commonly reported CMC benefit is increased quantity and quality of L2 production (Abrams, 2003; Beauvois, 1992, 1995, 1998; Chapelle, 1994; Chun, 1994; Kelm, 1992, Kern, 1995, Warschauer, 1996). Kitade (2000) specified that quiet speakers are more expressive in CMC settings, and McGuire, Kiesler, and Siegel (1987) found that the impact of gender and socioeconomic levels were less influential in CMC discussions when compared to face-to-face discussions. The increase in total and equitable participation that is enabled when engaging in CMC increases opportunities for output and interaction in the target language. This increase in quality and quantity of discussion in the target language enabled by participation in synchronous CMC has been proposed to contribute to other communication outcomes in the target language that have resulted from CMC use such as reading and writing (Coniam & Wong, 2004; Sullivan & Pratt, 1996) and conversational skills including oral proficiency (Chun, 1994; Kern, 1995; Kitade, 2000; Payne & Whitney, 2002).

Psychological Experiences and Computer Mediated Communication. It is apparent that CMC can accrue linguistic benefits to the language learner, but the specific factors involved in this process are not clear. Researchers have identified psychological factors that may be playing a role in this process, serving as mediators that may then enable linguistic benefits. In a study of second language learners using online chat programs, the students using online chat reported higher levels of positive attitudes along with more use of complex sentence structures (Conaim & Wong, 2004). The researchers posited that the students using online chat had greater opportunities to use English in an ongoing, informal manner, creating positive attitudes towards using CMC to engage in and practice the language, and a higher likelihood of using English to express more complex ideas.

Numerous research studies have revealed that the use of CMC in the classroom also decreases the anxiety that is often associated with language learning (Beauvois, 1998; Kern, 1995; Warschauer, 1996). A recent study exploring the carry over effects of CMC on communication apprehension revealed that regular student-centered discussion in the target language has the potential of making lasting positive effects on communication apprehension, whether it is in synchronous CMC or face-to-face discussion (Arnold, 2007). No significant difference was found between the synchronous CMC and face-to-face groups in long-term influence on communication apprehension, and Arnold posited that synchronous CMC can serve as a practice mode for oral communication. For the deaf student, face-to-face discussion in English is not possible if the auditory channel is not utilized, thus this finding supports the proposal that synchronous CMC can facilitate the student-centered discussion that appears to be a

critical aspect of language learning, and reduce the communication apprehension involved with language learning.

Critical Factors in Computer-Mediated Communication. It is important also to consider what features of CMC may best support the effectiveness of implementation in the classroom. Tolmie and Boyle (2000) reviewed the CMC literature to suggest eight factors that may influence CMC effectiveness: size of group, knowledge of participants, student experience, clarity about task, ownership of task, need for system, type of system, and prior experience with CMC. Through this review and an implementation case study, they posited that "the critical factors are those which provide a context and rationale for online communication by helping users to establish a *shared purpose"* (p. 119), consistent with Activity Theory (Leont'ev, 1978). The factors identified as potential facilitators of effective CMC such as smaller groups, personally knowing the people involved, and tasks involved having clarity, purpose, and personal ownership may be underlying the larger scale factor of "shared purpose."

Design principles posited by Doughty and Long (2003) for successful computer-assisted language learning also recommend that task-based learning be used in an interactionist paradigm. The literature on task-based learning in CMC is mixed, albeit emergent findings show that the type of task that is used in second language interaction may quantitatively and qualitatively affect the type of interaction (Pica, Holliday, Lewis, & Morgenthaler, 1989). The negotiation of meaning in computer-mediated communication appears to be facilitated when the tasks are goal-oriented and task-based as opposed to casual conversation (Pellettieri, 1999).

Computer-Mediated Communication and Deaf Learners. Research on the use of computer-mediated communication in deaf education is lacking, despite the origins of CMC in college instructional settings for deaf students (Beauvois, 1997). The few studies done that discuss CMC use with deaf students will be briefly summarized below.

A qualitative study of computer-networked conversations in seventh-grade classes of deaf students and their reading teacher gives us some areas of insight as to where CMC can have benefit for the deaf learner. Lissi and Schallert (1999) reported that, "although they were reading under grade level, students had meaningful conversations in written English, addressing questions posed by the teacher, posing their own questions to the teacher or other students, reacting to other participants' messages, sharing information, and generally having fun" (p. 373). The teacher reported that students continually participated in the CMC sessions, especially those students who were not active participants in the regular classroom. These findings are in line with previous research that have shown students participate more in online discussions, especially those who are not likely to participate in class (Beauvois, 1992, 1995, 1998; Kitade, 2000)

A study of blended learning (online and traditional) at the Rochester Institute of Technology surveyed four groups of students on their perceptions of communication in blended learning classroom settings: hearing, deaf, hard-of-hearing, and English as a second language (ESL) (Long, Vignare, Rappold, & Mallory, 2007). The results showed that the deaf and hard-of-hearing students, in particular, felt that the "quality and quantity of their interactions with the professor and other students was greatly improved by the online component" (p. 1). In general, all four groups of students reported positive experiences with the inclusion of an online component, but this was especially true for

the deaf and hard-of-hearing students. In fact, over 75% of the deaf and hard-of-hearing students felt that classes with online components should be offered to other students in the future.

In a Taiwanese study utilizing a wireless technology-enhanced classroom environment with deaf students that increased the interactivity of communication between students and teachers through the use of written text via Tablet PCs and interactive whiteboards, deaf students participated significantly more often than in settings without wireless technology enhancement (Liu et al., 2006). The wireless technology-enhanced environment reduced communicative difficulty and deaf students' distracting behaviors while in class. The students reported their experience to be relaxing, helpful, and desirable, and that it supported their understanding of content. However, taking a closer look at this study, it is apparent that the deaf students were not able to understand their teacher most of the time, as the teacher relied on spoken language. The positive results found in this study cannot be directly attributed to the technological affordances, but the fact that communication was enabled, or enhanced.

However, returning to the idea that interaction is a critical factor in language learning, not merely making language accessible, a recent study took a closer look at the *quantity* of interaction in online courses as a predictor of achievement (Long, Marchetti, & Fasse, 2011). This study of academic achievement of hearing and deaf students enrolled in 432 online courses at NTID, the National Technical Institute for the Deaf, found that those students enrolled in online courses with more interaction received higher GPAs than those enrolled in online courses with less interaction. The quantity of

interaction also influenced student perceptions of ease of communication, with students reporting that they were able to communicate better, and more, than in other courses.

From the initial investigation of literature on CMC in deaf education settings, it appears that deaf students may engage more in conversational discourse, especially those who may be less inclined to engage in face-to-face discussion (Lissi & Schallert, 2009; Liu et al., 2006). Deaf students also report their experiences with CMC to be positive, especially in the "quality and quantity of their interactions" (Long et al., 2007; Long, Marchetti, & Fasse, 2011). These reports of increasing engagement and positive experiences with the language lead us to consider that CMC can play a beneficial role in deaf individuals' psychological experience of learning and engaging with a language.

Motivation and Beliefs about the Self as a Language Learner

The psychological experience of learning and engaging with a language encompasses multiple dimensions, but my study will attempt to capture two dimensions of this psychological experience, that of motivation and beliefs about the self. The nature of the deaf individual's relationship with the spoken language of the environment is unique among bilinguals, in that their L1 is primarily used for conversational discourses and their L2 is primarily used for print discourses. It may be the case that deaf individuals' experience with engaging with the L2 has motivational purposes, self-beliefs, and influencing factors thereof that are unique to this population.

Motivation in second language learning. Language learning research has recently paid more attention to the motivational factors involved, as it is not sufficient merely to provide opportunities for language input and output for second language learning to happen successfully. Dörnyei (2005) discussed the importance of motivation

as providing "the primary impetus to initiate L2 learning and later the driving force to sustain the long and often tedious learning process; indeed, all the other factors involved in SLA presuppose motivation to some extent" (p. 65). More than 30 years ago, Gardner and Lambert (1972) initiated the discussion on the social context and motivation for second language learning, acknowledging that motivational factors may play a greater role than aptitude and that a broad range of sociocultural factors affect second language learning.

Dörnyei (2005) characterized Gardner and Lambert's (1972) work as part of the *social psychological period* (1959-1990) of L2 motivation research. This period moved away from traditional motivation research that focused on the individual, and toward recognition of the social context within which L2 learning happens. Gardner and Lambert acknowledged the unique nature of second language learning, pointing to the influence of a multitude of sociocultural factors such as language attitudes, cultural stereotypes, and the relationship between L1 and L2 communities. Gardner's theory of second language acquisition, the Socio-Educational Model of Second Language Acquisition (see Gardner, 2001 for most recent version) outlined how language achievement is influenced by integrative motivation, along with other factors. Gardner broke down the concept of *integrative motivation* into three subsections: integrativeness, attitudes towards the learning situation, and motivation. Gardner's theory and the assessments often used with this model, the Attitude/Motivation Test Battery (AMTB; reprinted in the Appendix of Gardner, 1985), has been the dominant force in SLA research over the last three decades. However, Dörnyei (2005) argued that SLA researchers have often erroneously interpreted Gardner's motivational framework as consisting of two components: that of integrative

orientation and instrumental orientation, which can be thought of, simplistically, as the motivational distinction between intrinsic and extrinsic motivation.

The need for "reopening the motivation research agenda" was initiated by Crookes and Schmidt (1991) and is often considered the starting point of the *cognitive-situated period* in motivation research (Dörnyei, 2005). One major impetus of this period that clearly reflects a different framework than the social psychological period of earlier motivational research is the focus on the microperspective, as opposed to a macroperspective of the social context. This research period was also heavily influenced by the motivation psychology work done in the 1980's with a more cognitive focus. Whereas the social psychological research had captured the broad social context within which L2 learning happens, looking at whole communities of language users and learners, the cognitive-situated period shifted toward a focus on the individual and the cognitive processes involved in specific, situated learning settings. Three research areas, in particular, are reflective of this intertwining of the learning setting and the cognitive variables involved: the applying of *self-determination theory* (Deci & Ryan, 1985, 2002) in L2 learning, the examination of *attribution theory* (e.g., Weiner, 1992), and the exploration of *task motivation* (e.g. Dörnyei, 2002; Dörnyei & Kormos, 2000; Julkunen, 1989, 2001; Kormos & Dörnyei, 2004).

However, as Dörnyei (2005) pointed out, the cognitive-situated approach neglected to account for two crucial aspects of motivation: its *dynamic character* and *temporal variation*. Dörnyei (2000, 2001) argued that a *process-oriented approach* is needed to allow for a more thorough examination of the ongoing changes in motivation over time, while still acknowledging specific learner behaviors and the learning setting.

Second language acquisition is, after all, a lengthy process throughout which motivation is expected to ebb and flow. A process-oriented approach allows for the recognition of this ongoing fluctuation over time. Research that actively acknowledged the role of process in language learning includes Williams and Burden's (1997) continuum of motivation: "Reasons for doing something" → "Deciding to do something" → "Sustaining the effort, or persisting" (p. 121). In a qualitative study of language learners in Ireland, Ushioda (2001) reported that the "varying temporal frame of reference shaping their thinking" (p. 117) seemed central to the participants' reported motivation. Dörnyei and Otto (1998; further elaborated by Dörnyei, 2000, 2001) developed a process model that separates the motivational process into three stages: the preactional stage, actional stage, and postactional stage.

The L2 motivational self system. Addressing weaknesses in Gardner's (2001) integrative motivation framework in the areas of globalization, social identity, and cognitive foundations, Dörnyei (2005, 2009a) proposed the L2 Motivational Self System, thereby conceptualizing L2 motivation within a "self" framework. This L2 motivational self system brings together the complex dimensions involved with motivation in a systematic and comprehensive way that connects these dimensions, and is supported by research and theory. Dörnyei's L2 motivational self system built on, and was compatible with, previous conceptualizations of motivation in L2 learning by Gardner (2001), Noels (2003), and Ushioda (2001). The three components of this system, defined further below, are: the *Ideal L2 Self*, *Ought-to L2 Self*, and *L2 Learning Experience*.

Dörnyei's (2005) motivational self system draws from work in psychological research on the self (Higgins, 1987; Markus & Nurius, 1986) that Dörnyei (2009a)

described as then allowing for "a convergence of self theory and motivation theory in mainstream psychology" (p. 10). The idea of *self* is one of the concepts most frequently referred to and utilized in psychology, but from a motivational perspective, one area that is particularly relevant: the study of *possible selves*. In Markus and Nurius' (1986) words, "possible selves represent individuals' ideas of what they might become, what they would like to become, and what they are afraid of becoming, and thus provide a conceptual link between cognition and motivation" (p. 954). Of particular interest here is the idea that possible selves represent future images of the self, as opposed to current images of the self, and thus recognize the power of imagination.

Dörnyei (2005) defined the *Ideal L2 Self* as "the L2-specific aspect of one's ideal self" (p. 106). This ideal self is a future-oriented, aspirational image of one's self as it could be. This component of the self system utilizes the power of imagination to picture one's self as a fluent L2 user, and is motivational in that it recognizes and aims to reduce the discrepancy between the actual self and this imagined, ideal self image. Dörnyei (2005) posited that this component aligns with traditional conceptualizations of integrative and internalized instrumental motives. Current research shows that this dimension "not only significantly correlates with integrativeness but also explains more variance in learners' intended efforts" (Papi, 2010, p. 469). It appears that the ideal self is malleable, and may be strengthened over time through direct, interactive engagement with the target language, as found in a study abroad immersion experience (Hsieh, 2009).

Dörnyei (2005) defined the *Ought-to L2 Self* as "referring to the attributes that one believes one *ought to* possess (i.e., various duties, obligations, or responsibilities) in order to *avoid* possible negative outcomes" (p. 105-106). Dörnyei proposed that this

ought-to self is related to extrinsic components in Noels (2003) and Ushioda's (2001) taxonomies. This can be thought of as a less-internalized idea of the self that includes an avoidance focus, or prevention. Supporting the idea that the ought-to L2 self is connected to extrinsic motivation, the factor of parental encouragement has been found to have a positive relationship with the ought-to L2 self (Csizér & Kormos, 2009). Studies have reported that this ought-to L2 self has less of a relationship with learners' intended efforts and motivated behaviors than does the ideal L2 self, however (e.g., Csizér & Kormos, 2009; Taguchi, 2009). Research conducted in a variety of settings has shown that this aspect of the self appears to be stable over time, especially in the postsecondary student (Kormos, Kiddle, & Csizér, 2011).

As for the *L2 Learning Experience,* Dörnyei (2009a) defined it as "situated, 'executive' motives related to the immediate learning environment and experience (e.g., the impact of the teacher, the curriculum, the peer group, the experience of success)" (p. 29). The situation-specific, immediate learning environment has an ongoing influence on learners' experience with, and attitudes towards, L2 learning. To garner the initial motivation for language learning, successful engagement with the actual language learning process is required (Dörnyei, 2009a). This component has links with the actional phase of Dörnyei and Otto's process-oriented model (1998, further elaborated by Dörnyei, 2000, 2001), Noels' (2003) intrinsic category, and the first cluster of Ushioda's (2001) motivational facets (Dörnyei, 2005). The L2 learning experience was found to have the strongest impact on motivated behavior (Csizér & Kormos, 2009; Taguchi et al., 2009). Research has shown that language learning experience and attitudes, when

measured within the L2 Motivational Self System, are dynamic and subject to change over time, even in short periods of time (Cai, 2010; Csizér et al., 2010).

Using the L2 Motivational Self System in my study will allow me to capture potential factors involved with motivation on the psychological plane that may be especially relevant for deaf individuals. The deaf community has a long, complicated history with language. Sign languages have long been considered subpar communicative systems, often considered pantomime or visual codes for the spoken language. It was not until 1960 that American Sign Language was demonstrated to have formal linguistic structure and recognized as a language (Stokoe, 1960), albeit not widely accepted until many years later. Deaf education settings have long held up English proficiency as a measure of success, of a level of achievement that many deaf individuals do not reach. There is a growing movement in the deaf community against using English proficiency as a measure of success, recognizing the history of language marginalization and oppression (i.e., Ladd, 2003; Lane, 1992). This leads to the question as to what the motivational factors behind learning and engaging in English are for deaf individuals, and if those factors may manifest differently in this population than in other language learners. The focus on the self that is found in the L2 motivational self system also allows for an exploration of how deaf individuals see themselves as English language users, if aspirational and/or obligatory (ideal self and ought-to self, respectively).

Self-efficacy in language learning. A different influence on motivation and second language learning comes from the work of social cognitive theorists who have posited that *self-efficacy* has a strong direct effect on performance, often more so than other motivational variables (Bandura, 1997; Pajares & Urdan, 2006). *Self-efficacy* as

conceptualized by Bandura (1977) is a prominent aspect of social cognitive theory that allows for a closer examination of how beliefs come into play when looking at learning. Bandura defined *self-efficacy* as the belief that one has of his or her capabilities for successfully completing a task in a specific context. Self-efficacy beliefs take into account the interplay between personal, behavioral, and environmental influences that make an impact on individual behavior. Bandura (1997) maintained that self-efficacy beliefs are often the strongest predictor of behavior, not actual ability, and his prediction has been supported across numerous studies. Students with a strong sense of self-efficacy have been found to take on challenging tasks willingly (Bandura & Schunk, 1981), show increased persistence (Bandura & Schunk, 1981; Locke & Latham, 1990; Schunk, 1982), exert greater effort (Salomon, 1984), have lower anxiety (Meece, Wigfield & Eccles, 1990; Pintrich & DeGroot, 1990), use learning strategies with greater flexibility (Bouffard-Bouchard, 1990; Pintrich & DeGroot, 1990), self-evaluate their academic performance accurately (Bouffard-Bouchard, 1990), and self-regulate better than others (Zimmerman, Bandura, Martinez-Pons, 1992; Zimmerman & Martinez-Pons, 1990).

Self-efficacy is context-specific, so this work takes a focus on the context of engaging with English as a second language. Prior research has demonstrated that self-efficacy measures of learners' capacities for writing and reading in English are powerful predictors of language performance outcomes (Pajares & Johnson, 1994; Prat-Sala & Redford, 2012; Shell, Murphy, & Bruning, 1989; Woodrow, 2011). For the deaf learner, assessing direct engagement with English is difficult if we consider that this direct engagement with English traditionally takes place audio-verbally. For deaf students, the direct engagement with English is most likely to occur via written text. Of special interest

in this study is the idea that CMC allows for increased opportunities for language interaction for the deaf learner, framed in terms of reading and writing. Hence, it follows that the self-efficacy context of particular interest is self-efficacy in reading and writing.

Self-efficacy perceptions are formed from four sources: mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states (Bandura, 1995). Bandura (1995) posited that mastery experiences are the most effective way of creating a strong sense of efficacy, through "acquiring the cognitive, behavioral, and self-regulatory tools for creating and executing appropriate courses of action to manage ever-changing life circumstances" (p. 3). Vicarious experiences also come into play when successful actions, skills, and attitudes are observed being utilized by social models who are perceived as similar, and as acting in similar contexts. Social persuasion also serves as an effective way to increase beliefs in one's capabilities, and more specifically, increase the likelihood to exert greater effort and sustain it (Bandura, 1995). Finally, physiological and emotional states influence self-efficacy beliefs through the interpretation of physical status, stress, and emotional reactions.

Computer-mediated communication used in deaf education settings has the potential of strengthening the sources of self-efficacy beliefs. Synchronous CMC, by its nature, allows for mastery experiences, vicarious experiences, and social persuasion. The physiological and emotional states experienced by deaf learners when engaging in English are an uninvestigated area, but other language learners have reported less anxiety when engaging in CMC (e.g., Kern, 1995). A study of self-efficacy and anxiety in college English students identified self-efficacy to be a powerful predictor of writing performance, supporting previous studies (Pajares & Johnson, 1994; Prat-Sala &

Redford, 2012; Shell et al., 1989) and further identified that students' self-efficacy was informed by their writing anxiety (Woodrow, 2011). This finding supports the hypothesis that the reduction in anxiety when using CMC to engage in language use can strengthen students' self-efficacy beliefs.

My study hypothesizes that the affordances inherent in using synchronous CMC in the deaf education classroom will increase deaf students' self-efficacy in using English. Self-efficacy beliefs have been found to be malleable, especially with the introduction of specific tools (Chularut & deBacker, 2004). A study of a language learning virtual environment that used communication tools such as synchronous CMC, among others, found that the non-native users of English using those tools rated themselves higher in self-efficacy towards advanced use of English and e-communication (Zheng, Young, Brewer, & Wagner, 2009).

It is important to consider that self-efficacy is especially critical for deaf learners, who may find themselves stuck in a deficit thinking model of teaching and learning: that deaf students struggle with English literacy. Hence, it is beneficial to look at deaf learners' beliefs in their capacities to succeed in this specific domain: direct engagement with English through writing. As discussed earlier about motivational factors, it may be the case here that examining deaf individuals' beliefs about their capacities in English literacy may present some findings unique to this population.

Language Learning within Dynamic Systems Theory

Language learning is continually influenced by a complex set of influences, ranging from cognitive, social, and environmental, and always subject to change. Research in second language acquisition is gradually shifting to a more dynamic,

evolving conceptualization of these processes. As an example, Ushioda (2006, 2009) suggested that a more complex accounting of motivation in second language learning is enabled by a *person-in-context* relational view. Ushioda (2009) made the argument that "we need to take a relational (rather than linear) view of those multiple contextual elements, and view motivation as an organic process that emerges through the complex system of interrelations" (p. 220).

Dörnyei (2009b) outlined the challenge facing second language acquisition researchers, to "adopt a dynamic perspective that allows us to consider simultaneously the ongoing multiple influences between environmental and learner factors in all their componential complexity, as well as the emerging changes in both the learner *and* the environment as a result of this development" (p. 229). A number of current researchers studying second language acquisition believe that this challenge can best be met by utilizing *dynamic systems theory* (DST) (e.g., Dörnyei, 2009b; Ellis, 2007). Ellis (2007) argued that from this dynamic view, "language can be seen as a complex dynamic system where cognitive, social, and environmental factors continuously interact" (p. 23).

A dynamic systems theory approach allows for the social and cognitive motivational dimensions to be combined in one study and their interrelatedness to be captured (de Bot, 2007; Larsen-Freeman, 2002). For my study, this means combining two differing theoretical perspectives on motivation: self-efficacy and the L2 motivational self system, and hence benefiting from a DST approach. When self-efficacy is examined in a cognitive motivational framework, the usual outcomes of interest take a focus on achievement. However, in this study, the outcome of interest is behavioral, and includes a temporal component: intended effort and its change over time.

Dörnyei (2009b) proposed that some research methods allow for questions to be addressed within the dynamic systems theory lens, including mixed methods research, that "offers a radically different new strand of research methodology that suits the multilevel analysis of complex issues, because it allows investigators to obtain data about both the individual and the broader societal context" (p. 242). A focus on change over time, as opposed to a focus on variables, is another methodological approach that supports an examination of language learning within a dynamic systems approach (Dörnyei, 2009b). Along those lines, this study takes a mixed methods approach, using multilevel modeling, that accounts for variations within individuals and groups and allows for change through time in order best to capture the complex dynamics involved in second language acquisition of deaf college students.

Conclusion

To briefly sum up this review of the relevant literature encompassing a wide range of topics, it is clear that collaborative, interactive language use facilitates the acquisition of a second language (i.e., Lantolf, 2000; Long, 1996; Swain 1995, 2000) and that this interactive language use is especially problematic for the deaf learner due to the lack of direct engagement with the target language (i.e., Antia, 1985; Long & Beil, 2005; Stinson, Liu, Saur, & Long, 1996). This direct engagement with the target language is enabled through technological affordances, most namely computer-mediated communication, and has been used in a variety of settings with deaf students and other language learners.

Another critical aspect of language acquisition is the psychological experience of learning and engaging with the language. Motivational factors and beliefs about the self

play a large role in the processes involved with initiating, persisting, and succeeding in learning a second language. Computer-mediated communication has been found to facilitate positive psychological experiences in language learning, including increasing motivation, greater positive attitudes, and lessening anxiety (i.e., Beauvois, 1998; Conaim, & Wong, 2004; Kern, 1995).

To sum up, the literature appears to suggest that computer-mediated communication serves as an affordance that enables greater direct, interactive engagement with the target language and positive psychological experiences in language learning environments. It is clear that direct, interactive engagement with English has historically been problematic for the deaf learner, but it is less clear what the psychological experiences involved with learning English are for the deaf learner, as this is an area previously unexplored in the literature. This study will address this gap by capturing psychological dimensions involved in language learning for the deaf learner, and concurrently attempt to facilitate positive psychological experiences through the increased direct engagement with English that computer-mediated communication will enable.

Chapter 3

Methods

Statement of Purpose

The purpose of this study is, broadly, to investigate the learning of English as a second language of deaf college students within a socioconstructivist framework, using computer-mediated communication (CMC) as an intervention hypothesized to influence deaf students' motivation, visualization of the self as a L2 user, learning experience, and self-efficacy in English language learning. A mixed methods approach that makes use of quantitative and qualitative methodological approaches will be used in order to allow for a multilevel analysis of the complexity involved in second language learning for the deaf student. The quantitative component will include Likert-style scale items and questionnaire instruments measuring the variables of interest and the change thereof over time. The qualitative component will make use of data from student interviews to support and triangulate the quantitative results.

Preliminary investigation. A pilot study is currently being conducted at the same college in which the dissertation study will take place. As the literature on CMC in this specific population, deaf college students, is not necessarily robust, a pilot study was a necessary step in my design process. This pilot study took a close look at two sections in the English for Speakers of Other Languages (ESOL) program, designed for deaf students, that introduced CMC throughout the semester. The same instructor taught these two classes, and there were a total of 20 students enrolled in these classes. I was able to observe online discussion sessions, examine transcripts of online discussions, and engage in informal, ongoing conversations with the teacher about these online discussions. More

extensive interviews with the instructor and the students who volunteer are currently being scheduled as the semester ends, and qualitative analysis will follow. The qualitative findings from this pilot study will help further guide my investigation, particularly in the qualitative aspect of my study.

However, the initial findings from this pilot study helped guide my design for the main study, specifically in how to ensure consistent data collection and address the potentials for inconsistency in instructor approach to online discussion. First, it became clear that it would be necessary to approach systematically how transcript data of online discussions would be archived and accessible, which will be done through the use of an online chat program that allows for automatic archiving of transcripts that would be immediately accessible to me. Second, the addition of a professional development session for all instructors before the semester begins was a clear area of need to support treatment fidelity, in that all instructors would have more likelihood of being consistent with how to approach online discussions in their classrooms.

Research Questions and Hypotheses

Question 1. To what degree does participating in synchronous CMC over time influence deaf learners' L2 motivational self system?

Hypothesis 1a. I hypothesize that there will not be significant changes in the ought-to self over time due to the intervention.

The rationale behind this hypothesis is that research has shown the ought-to self to be stable over time, especially in the postsecondary student (Kormos et al., 2011).

Hypothesis 1b. I hypothesize that there will be significant changes in the ideal self over time due to the intervention.

The rationale behind this hypothesis is that the act of direct and interactive engagement with English through CMC will support the visualizations of self as an L2 user, thereby strengthening the ideal L2 self. A study that looked at the change in the L2 motivational self system over time in a study abroad immersion experience reported that the ideal self is strengthened through this direct, interactive engagement with the target language (Hsieh, 2009).

Hypothesis 1c. I hypothesize that attitudes toward learning English (what Dörnyei (2009a) refers to as the *learning experience*) will significantly change due to the intervention.

The rationale behind this hypothesis is that CMC will allow for increased potentials of experiencing success in engaging in English, which will then lead to positive attitudes towards learning English. Previous research in a language learning setting using computer-assisted language learning found a significant difference in the L2 learning experience over time (Cai, 2011). Other research studies have also shown that language learning attitudes are, in fact, subject to change over time (Csizér et al., 2010).

Question 2. To what degree does participating in synchronous CMC over time influence deaf learners' self-efficacy beliefs in writing English?

Hypothesis 2. I hypothesize that students' self-efficacy in writing will significantly change over time due to the intervention.

The rationale behind this hypothesis is that the sources of self-efficacy, as posited by Bandura (1995), mastery experiences, vicarious experiences, social persuasion, and

physiological and emotional states, will be enabled through the use of CMC. Research studies looking at change in self-efficacy over time have shown that self-efficacy has increased with the introduction of specific tools such as concept mapping (Chularut & deBacker, 2004). A study of language learning in virtual online environments found that students showed higher self-efficacy toward advanced use of English (Zheng, Young, Brewer, & Wagner, 2009).

Question 3. To what degree does participating in synchronous CMC over time influence deaf learners' motivated behaviors in engagement with English?

Hypothesis 3. I hypothesize that students' motivated behaviors in learning English will significantly change over time due to the intervention.

One of the most commonly reported benefits of CMC in language learning is that it increases motivation, hence supporting the rationale behind this hypothesis (Beauvois, 1992, 1997, 1998; Kelm, 1992; Kern, 1995).

Question 4. What is the nature of students' experience in terms of motivational, attitudinal, and identity issues when engaged in a class that makes use of computer mediated communication?

I expect that interviews of students will reveal some common experiences students report about engaging in computer mediated communication, but that individual differences will be recognized that interact with motivational, attitudinal, and identity experiences. These individual differences will then suggest other factors that will support future research on the relationship of motivation and computer-assisted language learning in deaf education settings.

Method

Participants. The participants will consist of deaf college students enrolled in English for Speakers of Other Languages (ESOL) courses at a large, south-central community college that has a sizeable deaf student population. There are approximately 200 deaf students taking ESOL courses, including reading and vocabulary, writing and grammar, and ASL grammar, each semester. In Fall 2012, there will be 14 ESOL classes offered in reading/vocabulary or writing/grammar, with approximately 140 students enrolled in those classes. All of the deaf students enrolled in these ESOL classes during the semester in which this research study is conducted will be asked to participate.

The ESOL classes of interest are designed for deaf students who are studying English and are users of other languages, which in this case is American Sign Language (ASL). These courses are developmental courses for students whose ESL assessment score results do not allow for placement in college-level courses. The department offers, on average, 14 ESOL courses in reading and writing specially designed for deaf students, and places students in courses based on scores from ESL assessments. Writing and grammar and reading and vocabulary course offerings vary in levels from introductory, high beginning, low intermediate, high intermediate, and advanced. These levels of developmental courses, and the proficiency of the students enrolled, will allow for a wide spectrum of developmental English participants in this study.

Setting. The proposed study will take place in an ecological framework, allowing for an authentic examination of synchronous computer-mediated communication in the natural setting of a college classroom with deaf students learning English. In this educational setting with deaf students, the primary language used is American Sign

Language (ASL). The professors are fluent in ASL, and all in-class discourse happens using ASL. English is introduced via text forms, through class readings, assignments, or the use of technology that allows for the use and discussion of English through whiteboards or PowerPoint presentations, among other instructional technologies.

Each class has, on average, 10 students. These small classes allow for greater potentials of building collaborative discourse communities throughout the semester, an environment that should help students feel sufficiently comfortable to engage in online discussions through CMC. Discussions are a regular and expected class activity, and the only modification in this study will be to have a selected sample of these classes engage in discussion online, in varying amounts. Classes meet two days a week throughout the semester, for an hour and a half at every class session.

Measures

Self-efficacy in writing. A writing self-efficacy scale will be administered, the Self-Efficacy in Writing Scale (SWS), developed by Yavuz-Erkan (2004). This 21-item scale is based on Bandura's (1977) self-efficacy construct, and assesses students' beliefs about their writing ability. The items use a four-level Likert scale: Strongly Disagree, Agree, or Strongly Agree. All statements on the scale begin with "I can…" (Appendix A).

In reliability and validity analyses of this scale, Yavuz-Erkan (2004) found five factors: content, design, unity, accuracy, and punctuation. The reliability and validity of this scale was improved by Saban and Yavuz-Erkan (2011) by combining the factors of design and unity to result in a four-factor solution that accounted for 66.16% of the variance. The Cronbach alpha coefficients for the four factors ranged from .72 to .94,

reliability indicators that are acceptable for research purposes. These ratings will be made on six-point scales rather than four, to match the rest of the scales used in this study.

L2 Motivational Self System: Ideal L2 Self, Ought-to L2 Self, and Attitudes towards Learning English. A questionnaire will be administered that measures components in the framework of the L2 Motivational Self System based on Dörnyei et al.'s (2006) Hungarian studies: the Ideal L2 Self, Ought-to L2 Self, and Attitudes towards Learning English (what Dörnyei refers to as the L2 learning experience), using an established questionnaire developed for Japanese learners of English (Taguchi, 2009), shown in Appendix B. This 13-item questionnaire uses statement-type items measured by six-point rating scales ranging from "not at all" to "very much." This questionnaire has been found to be reliable and valid, with high Cronbach's alpha coefficient scores for the factors of interest (Ideal L2 Self, 0.89; Ought-to L2 Self, 0.76; Attitudes to Learning English, 0.90). Statements will be modified slightly to fit the population being assessed. For example, any statements that refer to "speaking English" will be changed to "using English."

Motivated Behaviors. A section of the L2 Motivational Self System questionnaire referred to above will be used to measure learners' intended efforts toward learning English, or *motivated behaviors*. Dörnyei (2005) delineated *motivated behaviors* in the L2 Motivational Self System framework, in particular, as the "effort expended to achieve a goal, desire to learn the language, and importance attached to the task of learning the language" (p.100). It has been argued that motivated behaviors are actually "one of the most important antecedents of learning achievement" (p. 100).

This four-item questionnaire uses statement-type items measured by six-point rating scales ranging from “not at all” to “very much.” The Cronbach alpha coefficient is 0.90, which is acceptable for research purposes.

Measure translation. All measures and questionnaires used in this study will be translated to American Sign Language (ASL) to ensure that the language is accessible to those with limited English proficiency. Translations will be checked using back translation techniques with a fully fluent ASL/English bilingual individual familiar with educational research constructs. Each item will have an ASL video attached to the text of the item, providing both language modalities to the participants.

Procedures

Before the beginning of the semester, a workshop will be conducted as a part of professional development training for the instructors involved in this study. This workshop will provide instructors with guidance on how to implement CMC in their classrooms most effectively, from a technical assistance standpoint as well as a practice standpoint. A review of the best practices in CMC will be shared with the instructors, drawing from the literature (e.g., Tolmie & Boyle, 2000). This workshop will include an interactive demonstration of a typical chat room discussion session, guided by myself, where all the instructors will actively participate in the online chat. Instructors will receive an explicit walkthrough on how to use CMC software in their classes, including instructions on how to troubleshoot for common problems encountered. This walkthrough will ensure that all instructors have the resources and know-how necessary to implement CMC effortlessly in their classes without technical difficulties taking up their class time. The workshop will also discuss effective practices for leading online

discussions and facilitating peer-to-peer dialogue, and offer instructional design strategies teachers can use to help engage students in CMC.

At the beginning of the semester, demographic information will be collected on the student participants including gender and age. Participants will be assessed on the following variables: self-efficacy in writing and motivated behaviors in learning English. Assessments will be also administered based on Dörnyei's L2 Motivational Self System for the following variables: Ideal L2 Self, Ought-to L2 Self, and attitudes to learning English. These assessments will be administered again at the end of the semester to allow for a pre-post test repeated measures approach.

Synchronous computer-mediated communication will be introduced to a randomly assigned sample of ESOL courses, in which those teachers will be asked to utilize synchronous CMC in their courses at least one time a week, for thirty minutes or more. The software CMC program will be used to monitor and record the time spent engaging directly in synchronous CMC. The percentage of class time spent engaging in synchronous CMC will be used as a measure of this predictor. The percentage of class time spent engaging in synchronous CMC will vary from 0 to 50%. To achieve treatment fidelity, courses will also be monitored for incidents of CMC use that may occur throughout the semester such as email conversations, chat room postings, or other use of asynchronous CMC, and accounted for in final analyses when necessary.

Class observations will be conducted at regular times throughout the semester when CMC is being used. These observations will allow for capture of dialogue that happens outside of the text transcript, as in ASL side conversations between students or teacher prompts. In particular, three classes will be randomly selected for consistent,

regular observation, with at least five time points scheduled for each of those courses. Particular attention will be paid to the initial introduction of CMC at the beginning of the semester, videotaping the teacher's introduction of CMC, and any prompts given to the class.

After the last class meeting of the semester, I will conduct interviews with a randomly selected sub-sample of class participants. Those participants will be selected with the goal of reaching maximum variety, taking into account age, gender, and English proficiency level, based on the class level in which they are enrolled. The initial sub-sample will be 20 participants, with the possibility of adding more participants if necessary to reach data saturation of categories resulting from analysis. These voluntary interviews will be conducted face-to-face, in American Sign Language, of which I am a native user. Interviews will last from 40 minutes to an hour.

Students will be asked broadly to discuss their experiences with active engagement in English through the course, whether it is via CMC or not. Questions will be asked that encourage thought about their beliefs about their capacities to write in English and how they perceive themselves in the future when engaging in English. Students will be asked to reflect on their attitudes about learning English, the experience of being involved with online discussions, changing attitudes and beliefs through the semester, motivation for further engagement with English, identity and visualizations of themselves as English users, expectations in learning English, and any other information that students contribute. For students in classes that made use of synchronous CMC, the transcripts from online discussions will also be used in the interviewing to guide self-reflective thought about specific discussion topics or comments of particular interest.

These interviews will be video recorded in order to capture the visual language modality used. Transcripts of the interviews will be typed, translating from ASL to English, following completion of the interviews. All the translations will be conducted and double-checked by individuals who are proficient in both English and ASL: a research assistant and myself.

Data Analysis: Quantitative

Multilevel modeling. As this study includes data where intra-class correlations will be found amongst members of the same class, this violates the assumption of independence that is necessary to conduct many statistical techniques such as regression and ANOVA. Multilevel modeling (MLM) is a technique that addresses this violation, and in fact, takes advantage of the layers of data available when looking at data as "nested" within clusters, as is often the case in educational systems (Raudenbush & Bryk, 2002). I will use hierarchical linear modeling (HLM) techniques that will allow me to represent individual effects on the first level, and group effects on the second level, in a two-level HLM (Raudenbush & Bryk, 2002). Including the pretests as a covariate and the posttests as the dependent variable in this multilevel model allows me to test individual change as an effect of the predictor, that of CMC use. This two-level model will be a conditional model, where predictors are included in at least one of the two levels (Raudenbush & Bryk, 2002). The treatment, CMC, is a fixed factor but will be used in random classes in the setting, thus the class level is a random factor, and treatment effects would be modeled as randomly varying across groups (Kreft & de Leeuw, 1998). A model with random variation across groups allows for inferences to be generalized beyond the particular groups involved in the study (Beretvas, 2009).

These analyses will use the HLM6 statistical package software program (Raudenbush, Bryk, & Congdon, 2009). This proposed data analysis is based on my initial understanding of multilevel modeling, as the most advanced statistical analysis class I have completed thus far is Survey of Multivariate Methods. I am currently enrolled in Hierarchical Linear Modeling in Fall 2012, and will be able to achieve a greater understanding of how to incorporate all the variables in my study in a cohesive multilevel model that also captures change over time.

Number of data points. The frequently referred to rule of thumb for the number of data points required per variable is 15, and the number of students (140) in this study exceeds the data points required for the analysis of student-level predictors, and closely meets the number of data points (14 classes) for the class-level predictor of CMC.

Variables. All continuous student- and class-level variables used in this analysis will be centered around their own group means, referred to as *group mean centering*, which makes the interpretation of multilevel results more meaningful by retaining within-group variation and removing between-group variation (Raudenbush & Bryk, 2002). In this study, student-level (Level 2) and class-level (Level 3) predictor variables will be centered around their group mean. The Level 1 predictor of time will look at the measures taken at the beginning and the end of the semester, and identify any changes thereof over time. The Level 2 student-level predictors are the three components of Dörnyei's L2 Motivational Self System (Ideal L2 Self, Ought-to L2 Self, and Attitudes Towards Learning English). The Level 3 class-level predictor is the percentage of class time spent engaging directly with synchronous CMC. Using a continuous measure of CMC use as a predictor will increase the power of this study, and eliminate the need to

have equal sizes of groups using different amounts of CMC. The outcome variables of interest are Motivated Behaviors in Learning English and Self-Efficacy in English.

Data Analysis: Qualitative

To address the qualitative component of this study, interviews will be conducted in order to triangulate findings. To analyze the data from interviewing, I will use the constant comparison method (Glaser & Straus, 1967), including open coding in an attempt to separate data into categories and codes, looking for similarities and differences by which to group comments and ideas together in broader conceptual categories. This coding process will include the assistance of a research assistant in order to cross-code and ensure that consistency is reached. As I go through all the interviews, I will try to uncover different dimensions and properties of the concept in comparative analysis. As I do this, I will look for connections and processes that then allow for theoretical development of broader properties of the data. This theoretical development will recognize the importance of process, as conceptualized by Corbin and Strauss (2008), as the ongoing action/interaction/emotion in response to situations. I will move back and forth between open coding, comparative analysis, and axial coding. To ensure maximum trustworthiness is reached, member checking will be conducted by going back to participants to review transcripts and my analysis to discern any possible misunderstandings or misinterpretations of data.

Ethical issues

This study will follow all the procedures and regulations set by the Institutional Review Board at the University of Texas to comply with the ethical standards of research and protect the rights of human subjects. Informed consent will be obtained from all

participants, and all data will be kept confidential and maintained anonymously in a secure location. Participants will be informed of their right to remove themselves from this study at any time without penalty. Although the use of CMC in their instruction is not something for which they have the right to agree to or not, they will have the right to agree to the use of their responses to questionnaires and postings in the CMC discussions.

Chapter 4

Program Evaluation

This addendum will expand upon the proposed research study discussed in the first three chapters, to offer a perspective from an approach of program evaluation. The hypothesized increase in motivation and beliefs of the self as English language users that is also supported in the literature beyond my proposed study lends credence to the need for an evaluation model in order to be able to propose that other programs also incorporate online chat components in educational settings for deaf students. This evaluation approach will allow a closer exploration of the unique factors involved with the implementation of online discussion for the population of interest, and support potential further use of online discussion as an instructional tool in classrooms designed for deaf students. In order to do this, a more finely grained analysis of program decomposition will highlight the processes involved with implementing this approach. Some additional measures and analytical procedures will be undertaken as a way of answering questions that will come from the stakeholders involved with this process. Multilevel outcomes will also be examined, some beyond the scope of a research study, and will offer more immediately visible and applicable outcomes to the settings of interest.

Program Summary

The program being evaluated is discussed in detail in the first three chapters, but a brief review will be provided here. The low English literacy levels of deaf individuals clearly indicate a need for instructional improvements in English and evaluation of the

efficacy thereof for this population (e.g., Luckner, ... Muir, 2005; Paul, 2003; Schirmer & McGough, 2005; Traxler, 2000). Theoretical perspectives of language acquisition and learning, such as the interaction hypothesis, lend credence to the need for increased language interaction in the target language as a key component of successful language learning (Long, 1996). Interaction in English as the target language has been historically problematic for the deaf learner when in settings that use English as the language of the classroom, through the use of accommodations or assistive listening technologies (e.g., Long & Beil, 2005; Stinson, Liu, Saur, & Long, 1996). The proposed program, which integrates online chat in preexisting English curriculum for deaf students, aims to meet the need of improving English instruction for deaf learners through increased interaction with the target language.

Participants will be deaf college students enrolled in English for Speakers of Other Languages (ESOL) courses designed for deaf students, which are developmental courses that prepare students for college-level English coursework. This program takes place in an ecological framework that allows for an evaluation of the intervention as it would occur in authentic learning settings. To this aim, a sample of instructors will be asked to incorporate online discussions in the regular course curriculum, as appropriate for the content and instructional goals. However, based on the literature on efficacy of online chats in the classroom, instructors were asked to make these online chats, at a minimum, be regularly scheduled activities with at least 30 minutes of time per week spent engaging in online chats. A professional development workshop will be conducted that will provide the instructors with an overview of best practices for integrating online

chat in their courses, facilitating peer-to-peer dialogue, and instructional design strategies (e.g., Tolmie & Boyle, 2000).

Theoretical Basis. As mentioned previously, language acquisition theories posit that interaction in the target language is key for successful language learning. Motivational theories also provide frameworks that establish motivation as a key component for ongoing language learning. Previous researchers have demonstrated that computer-mediated communication in language learning settings does provide increased opportunities for interaction in the target language, and confers increased motivation and positive attitudes about the language (e.g., Beauvois, 1992, 1995, 1998; Chapelle, 1994; Chun, 1994; Kelm, 1992, Kern, 1995, Warschauer, 1996). The L2 Motivational Self System theory allows for a closer examination of key processes involved with motivation in second language learning, including attitudes and identity beliefs, which will be examined as mediators in the language learning process. These theoretical frameworks, which are discussed in depth in the literature review, support the proposal that incorporating online chat in English coursework for deaf students will lead to positive outcomes in English language learning.

Program Outcomes

The overarching goal of the program is to improve English achievement for deaf students by increasing interactive engagement with English as the target language. However, this is a long-term goal, in which there are multiple processes that are involved with reaching this goal. Scale measures of these outcomes, including the L2 Motivational Self System and the Self-Efficacy in Writing Scale, are discussed in more detail in Chapter 3: Methods.

There are two short-term student outcomes which are more immediately conferred as a result of time spent in online chats: 1) increased active and direct engagement with English, 2) higher perceived self-identity as an English language user. The first-order outcome of interactive engagement with English will be primarily measured through an analysis of transcripts of the online chats, to measure the amount of time spent in direct and active discussion using English as the target language. The first-order outcome of perceived self-identity as an English language user will be measured by the Ideal L2 Self subscale of the L2 Motivational Self System scale. Sample items from this subscale include, "I imagine myself as someone who is able to use English," and "I can imagine myself having a discussion in English." This questionnaire has been used with multiple participants across countries and settings, and has strong reliability and validity (Taguchi, 2009). This scale will be administered at the beginning and the end of the semester, and changes in the mean difference scores will be assessed.

The second order outcomes that result are threefold: 1) increased motivation in learning English, 2) more positive attitudes about the learning experience, and 3) higher self-efficacy beliefs in using English. Motivation and attitudes about learning English will be measured through subscales of the L2 Motivational Self System scale, referred to above. Sample motivation subscale items include, "I am working hard at learning English," and "I think that I am doing my best to learn English." Sample attitude items include, "I always look forward to English classes," and "I really enjoy learning English." Self-efficacy beliefs in using English will be assessed through the Self-Efficacy in Writing Scale (SWS) developed by Yavuz-Erkan (2004), which has strong reliability and

validity. Items on this scale ask students to about their agreement with statements like "I can link ideas together easily."

The third order outcome to be assessed is improved academic achievement in English. Looking at student enrollment and success rates in higher-level English coursework will assess this overarching long-term outcome. These assessments will track students over the long term, based on whether or not they were enrolled in classes that used online chats, and the percentage of time they spent participating in those online chats, as class time spent will be variable.

Table 1: Program Outcomes

1st Order	Students have increased interactive engagement with English. Students report higher self-identities as English language users.
2nd Order	Students report higher motivation in learning English. Students experience more positive attitudes about studying English. Students feel more self-effacious in using English.
3rd Order	Students continue on to enroll in and have higher success rates in higher-level English coursework.

Theoretical Overview

This evaluation approach will be theory-driven, which allows for a two-pronged approach to evaluating the integration of online chat within classrooms designed for deaf students studying English. The first step is a conceptual assessment of program processes, and the second step is an empirical assessment of program outcomes (Rogers, Petrosino,

Huebner, & Hacsi, 2000). In Figure 1 below, a linear program theory model is shown which demonstrates this breakdown, with two theoretical components: program process theory and program impact theory (Donaldson, 2007). More detailed description of the program processes, which includes the activities, inputs, constraints, and outputs, will be shown based on the Decomposition Model as a framework (Borich & Jemelka, 1982). This model will provide a more systematic perspective of the processes involved within the program, including an overview of available resources, potential constraints, what would be needed to implement the program, and expected outcomes.

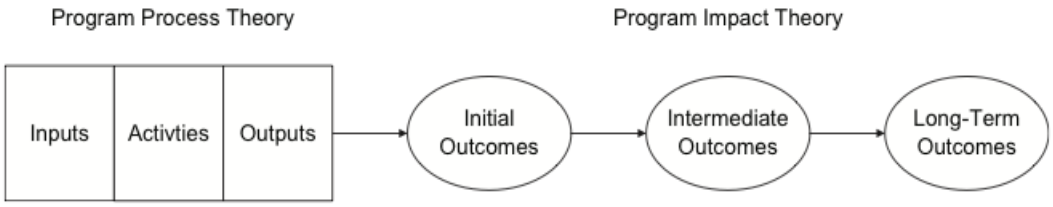

Figure I. Linear program theory model. Source: Adapted from Donaldson, S.I. (2007) Program theory-driven evaluation science. New York, NY: Lawrence Erlbaum, p. 25

Theoretical Orientation. As this program takes place in an ecologically valid setting, that of the classroom over the course of a semester of study, it would be improbable to filter out all the contextual and moderating variables which could influence program outcomes. It is primarily for this reason that a value-oriented theoretical orientation is appropriate for this evaluation approach (Borich & Jemelka, 1981). It is also important to consider the unique dynamics of the participants involved in this program, and the influences of history, culture, and language that interact with potential outcomes. When considering motivational, identity, and language outcomes in the deaf community, the evaluator has the obligation to be particularly sensitive to historical and

cultural frameworks that come into play. It is the influences of these intangible contextual factors that cannot be ignored, and would be neglected in a decision-oriented approach that strictly assesses outcomes based on measures and the perspectives of decision-makers.

It is also important to consider that the potential outcomes of this program may be emergent, and undiscovered in previous literature, due to the lack of robust research that captures specific processes and outcomes involved in online chat for deaf learners of English. As value judgments are undeniably a part of scientific analysis (Scriven, 1974), a value-oriented approach allows the evaluator to recognize and ascribe values to previously unrecognized outcomes that may become apparent through ongoing analysis of data, in particular the data that emerges from the participants themselves through interviews and observations.

Chapter 5

Program Decomposition

This chapter will provide an overview of the program, using a program decomposition model (Borich & Jemelka, 1982). This model will allow for an analysis of the legitimacy, representativeness, and appropriateness of the objectives of this program through a closer examination of the processes involved. Figure 2 shows an overview of the program, including inputs, constraints, and outcomes.

Program Overview

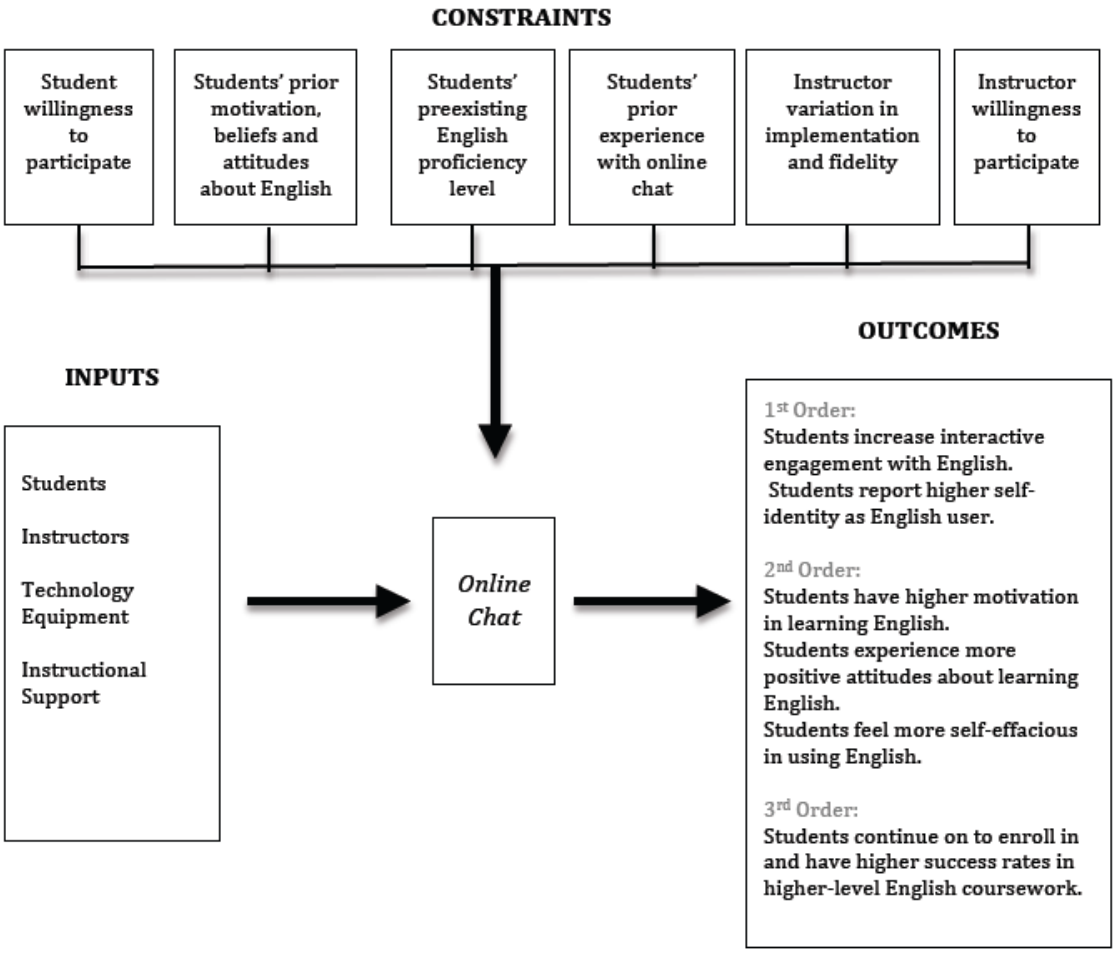

Figure 2: Program Overview: Inputs, Constraints, and Outcomes

To ensure the effectiveness of the program, those inputs in the form of resources should be available: students, teachers, technology equipment, and departmental support. Those are the core binary constraints that would influence the activity if those resources were nonexistent. More moderating constraints are explicated at the top of the overview model, as those things that moderate or influence the efficacy of the activity.

Program constraints in this situation include those that come from the student's beliefs, attitudes, skills, and experiences that could influence the outcomes of this program. First, student willingness to participate is an expected constraint, especially at the postsecondary level, as those students have more choices in what classes they enroll in, complete, and to what extent they participate in class activities. Students' preexisting English ability levels could also serve as a constraint, as those students who are not as proficient in the language could be less willing to participate in the class discussions using English. Other preexisting influences that may come into play are prior motivation, beliefs and attitudes about English, and prior experience with using online chats. Those students with higher initial motivational levels may show more inclination to participate in online chats and show greater benefits, or it may be the case that those highly motivated students will not reveal increases in motivation through participating in the program due to the ceiling effect. Students' prior beliefs and attitudes about using English will also interact with program outcomes, as we will be assessing changes in those beliefs and attitudes. Some beliefs and attitudes may not be as malleable as others, or show significant change in the brief time frame in which this activity takes place. Students' prior experiences with online chats will also color their present experience, based on the

benefits conferred, negative experiences that occurred, or the programs used. College students may have high expectations about online chat programs based on their prior experiences with using online chat, and if they find the programs used in the classroom to be subpar to what they prefer to use, that could also influence their motivational levels.

Other constraints that are also important to consider are more systematic constraints that emerge from the instructors involved in the program. As for students, instructor willingness to participate is one of the base constraints. If instructors are not willing to participate on a consistent basis, this would influence the outcomes of this program, in particular the evaluator's capacity to measure and assess outcomes. Another constraint that would influence outcomes is that of instructor variation in implementation and fidelity of incorporating online chats in their classrooms. Some instructors may be less committed to the program, and more willing to be consistent in implementation and tracking of online chat. It is also important to consider that this program allows flexibility for instructors in how specifically the online chat is implemented and led. Teachers may vary in how they choose to integrate the chats in their curriculum, and vary in the degree of guidance they have during these chats. For example, a teacher with a more authoritative approach may dominate the conversational time, not allowing students to have the time that is needed to engage in direct, interactive use of English in the chats.

The first order outcomes of this program are that students will increase interactive engagement with English, and report higher self-identity as an English user. The second order outcomes are that students will have increased motivation, experience more positive attitudes, and feel more self-effacious in learning and using English. The third

order outcome is that students will continue on to enroll in and have higher success rates in higher-level English coursework.

Primary Program Transactions

The three main transactions that occur within this program are outlined in Figure 3. The first transaction (1.0) trains instructors in effective online chat strategies; the second transaction (2.0) has instructors integrate online chat consistently in class time; and the third transaction (3.0) has students engage in consistent online chats in English.

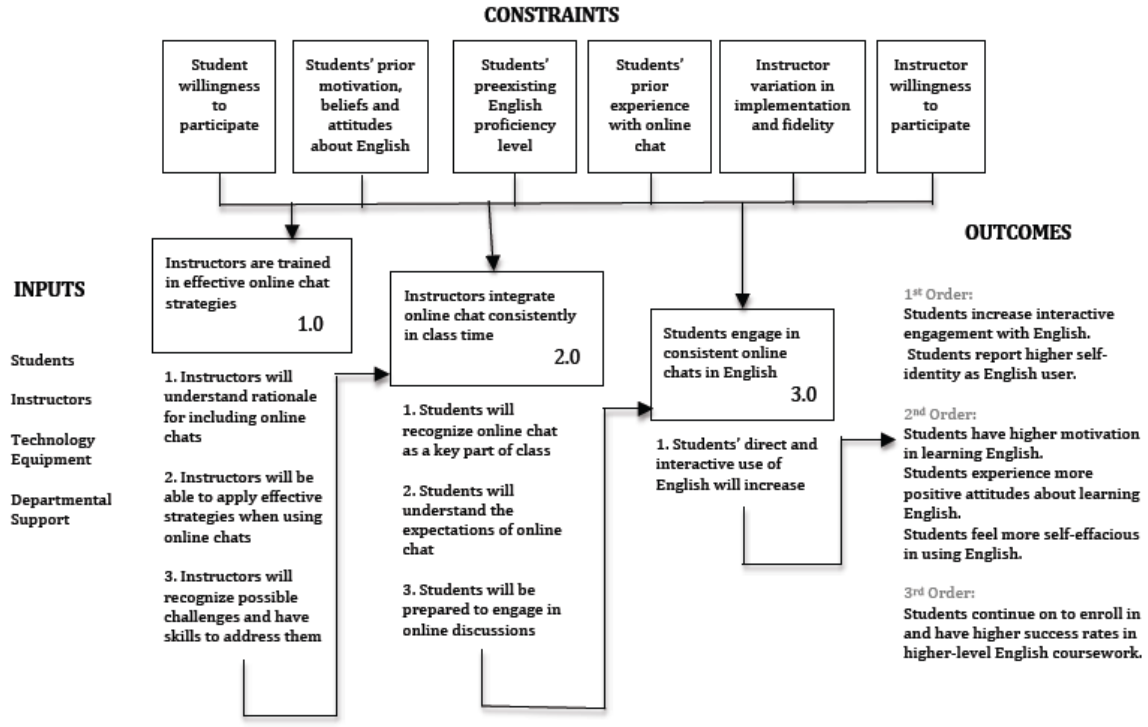

Figure 3: Primary Program Transactions

All those transactions are set within the previous program overview model, with similar inputs, constraints, and program outcomes. The inputs need to be present for all the transactions to occur. The constraints, as discussed above, are present for all the

transactions throughout the program. This model demonstrates outcomes at each level of activity that then enable the next level of activity, cumulating in cohesive program outcomes. The first transaction, that of training instructors in effective online discussion strategies for deaf students, confers instructor-level outcomes of understanding the rationale supporting introduction of online chats, which will then increase the likelihood of gaining instructor buy-in to integrate online chat consistently in class time, which is transaction 2.0. Other enabling outcomes from transaction 1.0 are that instructors will be able to apply effective strategies and to recognize possible challenges and have the tools to address them for the online chats. These strategies will include a discussion of the efficacy of consistent, regularly scheduled online chats. This is an enabling outcome that will also support transaction 2.0, the integration of online chat consistently during class time. Transaction 2.0 leads to student-level outcomes, in particular those outcomes that are related to student expectation, comprehension, and preparedness that are key enabling factors for the final transaction, that of student engaging in consistent online chats in English during class time. The enabling outcomes from transaction 2.0 are key in ensuring that students have the knowledge and tools in which they need to be able to then participate in online discussions. Consistent discussions that are integrated by the instructor help students recognize, expect, and prepare for the next discussion, and be more actively engaged in ongoing discussions. The final transaction, that of students engaging in consistent online chats in English, will result in an increase in students' direct and interactive use of English. This enabling outcome will then result in comprehensive program outcomes, which are outlined under OUTCOMES to the right of the primary program transactions model.

Chapter 6

Stakeholder Questions

Program stakeholders are those individuals who have something at stake, or are invested in the program of interest. Those individuals naturally have opinions, thoughts, and questions that help guide a program evaluation plan and analysis. After all, who else does a program benefit if not its stakeholders? Stakeholders are also crucial to the success or failure of the program, in that it is those individuals who will lend support to future endeavors if this program is found to be beneficial, successful, or effective. In this program, there are three stakeholders: students, instructors, and program administrators. This chapter will outline natural language questions that those stakeholders are likely to ask, and propose data analyses to address those questions.

Stakeholder 1: Instructors

The instructors are a key part of the efficacy of this program. Program constraints show that instructors can influence program outcomes by willingness of participation and implementation, along with variation in how online chats are implemented in their classes. Natural language questions that instructors would be likely to ask will help assess how to appease potential concerns and best support potential program outcomes.

Why should I agree to include online chat in my classes?

Upon departmental support, which was included in the model as an essential input, professional development will be offered to the instructors in the department that will help answer this question in an ongoing manner. This professional development

session will provide instructors with a empirical basis for including online chat in their classes, including findings showing that students who participate in online chat are more motivated, have positive attitudes about online chats, and that there are emerging positive findings for deaf students, in particular. Online chat will be proposed as an additional tool as a part of instructors' toolkit, to meet instructional needs on an ongoing basis, as needed. It is the goal of this professional development session for the instructors to learn about the empirical basis of this proposed program, and to answer all possible questions about challenges that may be faced that could be detrimental influences to program implementation.

Since this is a part of the program activity in the training process, no analysis is needed to answer this question in particular. However, interviews with the instructors at the end of the semester will help recognize if this buy-in by the instructors were achieved, and thus inform future training processes.

Will this help increase my students' motivation in English classes?

It is predicted that students' participation in online discussions will lead to increased motivation for learning English in the future, as that is what the literature appears to offer. More specifically, students participating in online discussions overwhelmingly report increased motivation and positive attitudes. In addition, increased time spent engaging with the target language has been found to lead to higher beliefs and attitudes about identities and capacities as language users. It is these two-pronged findings that show increases in motivation that lead to this hypothesis.

To measure student motivation, surveys will be administered at the beginning and the end of the semester that will include the Motivation subscale of the L2 Motivational

Self System scale developed by Taguchi (2009), which is described in depth in Chapters 3 and 4, and shown in the Appendices. As this study includes data where intra-class correlations will be found amongst members of the same class, this violates the assumption of independence that is necessary to conduct many statistical techniques such as regression and ANOVA. Multilevel modeling (MLM) is a technique that addresses this violation, and in fact, takes advantage of the layers of data available when looking at data as "nested" within clusters, as is often the case in educational systems (Raudenbush & Bryk, 2002). I will use hierarchical linear modeling (HLM) techniques that will allow me to represent individual effects on the first level, and class effects on the second level, in a two-level model (Raudenbush & Bryk, 2002). This model will include the motivation pretest as a covariate in level one, with the outcome variable being the motivation posttest. An unconditional model will be run to assess if the motivation scores differ significantly among groups of students. If that model is significant, a conditional model will be run that includes online chat as a predictor in level two. This will allow us to assess if online chat increases students' motivation in studying English.

Will my students with lower English proficiency levels benefit from online chats?

It is predicted that English proficiency levels will not interact significantly with potential outcomes of online chat for this population. The literature shows us that teachers and students report positive benefits of online chat, even within populations with lower language proficiencies.

To answer this question, a two-level HLM model will be run using the same analysis approach as shown in the previous question with online chat as a level-two predictor, adding another level two covariate, that of the class proficiency level. Models

will be run with several dependent variables of interest: motivation, attitudes, future self-identities, and self-efficacy in writing. Students in this program are enrolled in classes that vary from levels one to five, according to their English proficiency levels on assessments administered at initial enrollment. Their class level will serve as a proxy for their individual language proficiency level, as it would not be practical, or beneficial, to the program for students to have to undertake extensive testing in English proficiency at the beginning of the semester, above and beyond their course work requirements. Assessing the significance of this covariate's regression values in all the models will quantitatively answer the question of online chat benefit for students with lower proficiency levels in various outcomes of interest: motivation, attitudes, future self-identities, and self-efficacy in English.

In addition, interviewing will capture student perspectives, ensuring that students from varying class levels are included in the interviews in order to reach data saturation. Instructor perspectives will also be included in the qualitative analysis of data emerging from interviews in regard to this question.

Stakeholder 2: Students

Will I like online chat in English classes?

It is predicted that online chat will increase students' attitudes about learning English. There is a robust literature base that supports this hypothesis: that students have positive experiences with online chat, and report greater positive attitudes. This question will be answered both qualitatively and quantitatively.

To measure student attitudes, surveys will be administered at the beginning and the end of the semester that will include the Attitude subscale of the L2 Motivational Self

System scale developed by Taguchi (2009), which is described in depth in Chapters 3 and 4, and shown in the Appendices. The attitude pretest will be used as a covariate in a two-level HLM, while the posttest will be used as the outcome variable. As discussed in depth in an earlier question, a two-level HLM model will address nested data structures as found in this study. An unconditional model will be run to assess if the attitude scores differ significantly among groups of students. If that model is significant, a conditional model will be run that includes online chat as a predictor in level two. This will allow us to assess if online chat increases students' attitudes in studying English.

In addition, interviewing will capture student perspectives, ensuring that students from varying backgrounds are included in the interviews in order to reach data saturation. Instructor perspectives will also be included in the qualitative analysis of data emerging from interviews in regard to this question.

Will my English skills improve?

While it is qualitatively difficult to directly assess improvements in English skills, it is predicted that online chat will increase students' beliefs of their capacities in using English. Self-efficacy measures can capture students' beliefs of their capacities in using English. Mastery experiences, vicarious experiences, social persuasion, and physiological and emotional states, which are hypothesized sources of self-efficacy (Bandura, 1995), will be enabled through the use of online chat. Self-efficacy beliefs can be considered as a mediator, as part of the process in increasing language skills and reaching language proficiency. This question will be answered both qualitatively and quantitatively.

To measure student beliefs in their capacities in English, surveys will be administered at the beginning and the end of the semester that will include the Self-

Efficacy in Writing Scale (SWS), developed by Yavuz-Erkan (2004), which is described in depth in Chapters 3 and 4, and shown in the Appendices. The ideal self pretest will be used as a covariate in a two-level HLM, while the posttest will be used as the outcome variable. As discussed in depth in an earlier question, a two-level HLM model will address nested data structures as found in this study. An unconditional model will be run to assess if self-efficacy scores differ significantly among groups of students. If that model is significant, a conditional model will be run that includes online chat as a predictor in level two. This will allow us to assess if online chat increases students' self-efficacy beliefs in English.

In addition, interviewing will capture student perspectives, ensuring that students from varying backgrounds are included in the interviews in order to reach data saturation. Instructor perspectives will also be included in the qualitative analysis of data emerging from interviews in regard to this question.

Stakeholder 3: Administrators

Will the deaf students be more likely to use English effectively in the future?

While it is also difficult to directly assess potential future use of language, we can assess students' beliefs about the future and how they may use English in the future. It is predicted that online chat will increase students' beliefs about their identity as English users in the future. The rationale behind this hypothesis is that the act of direct and interactive engagement with English through online chat will create opportunities for the visualizations of self as an English user. The Ideal L2 Self component of the L2 Motivational Self System depicts these self-visualizations as future-oriented, aspirational

images of one's self (Dörnyei, 2005). This question will be answered both qualitatively and quantitatively.

To measure student beliefs in their future selves in English, surveys will be administered at the beginning and the end of the semester that will include the Ideal Self subscale of the L2 Motivational Self System scale developed by Taguchi (2009), which is described in depth in Chapters 3 and 4, and shown in the Appendices. The self-efficacy pretest will be used as a covariate in a two-level HLM, while the posttest will be used as the outcome variable. As discussed in depth in an earlier question, a two-level HLM model will address nested data structures as found in this study. An unconditional model will be run to assess if the future self belief scores differ significantly among groups of students. If that model is significant, a conditional model will be run that includes online chat as a predictor in level two. This will allow us to assess if online chat increases students' future self beliefs in English.

In addition, interviewing will capture student perspectives, ensuring that students from varying backgrounds are included in the interviews in order to reach data saturation. Instructor perspectives will also be included in the qualitative analysis of data emerging from interviews in regard to this question.

Will students be more likely to advance to higher-level coursework?

The analysis of this question will provide administrators with an overarching perspective of the program efficacy within a long-term vision of departmental retention and successful completion, which is often a primary concern of administrators. To answer this, data will be collected from the department on students' course grades, completion, and enrollment trends in prior, current, and subsequent semesters. Analyses will be

conducted that attend to differences in these grades, completion, and enrollment for those students who used online chat in courses, and those who did not.

Appendices

Appendix A.

Writing Efficacy Scale (Yavuz-Erkan, 2004)

Read each statement below and then use the following scale to indicate various degrees of effectiveness. Of course, there are no right or wrong answers to such questions, so do not spend too much time on any one statement, but select the answer that best applies to you. Thank you for your cooperation.

1= I do it very well 2= I do it well 3= I do not do it well 4= I do not do it well at all

1 I can write interesting and appropriate response to a given topic
2 I can easily cover all the information that should be dealt within a given topic.
3 I can use appropriate style to the task.
4 I can easily match style with topic
5 I can generate ideas to write about easily.
6 I can think of ideas rapidly when given a topic to write about.
7 I can write on an assigned topic without difficulty.
8 I can easily find examples to support my ideas.
9 I can justify my ideas in my compositions.
10 I can write grammatically correct sentences in my compositions.
11 I can use complex language in writing without difficulty.
12 I can produce error free structures.
13 I can spell very well.
14 I can use the punctuation correctly.
15 I can edit my compositions for mistakes such as punctuation, capitalization, paragraphing.
16 I can easily use structures I have learned in my class accurately.
17 I can link ideas together easily.
18 I can use transition words correctly to make my composition a better one.
19 I can use connectors correctly to make my composition a better one.
20 I can use a wide range of vocabulary in my compositions.
21 I can use synonyms in a composition rather than repeating the same words over and over again.
22 I can write a brief and informative overview of a given topic.
23 I can manage my time efficiently to meet a deadline on a piece of writing.
24 I can rewrite my wordy or confusing sentences to make them clearer.
25 I can extend the topic to fit in a given word limit.
26 I can choose and defend a point of view.
27 I can make long and complex sentences.
28 I can fulfill a writing task without difficulty within a given time limit.

Appendix B.

The L2 Motivational Self System Questionnaire (modified from Taguchi et al., 2009)

Motivated Behaviors
If an English class was offered at university or somewhere else in the future, I would like to take it.
I am prepared to expend a lot of effort in learning English.
I am working hard at learning English.
I think that I am doing my best to learn English.

Ideal L2 Self
I can imagine myself having a discussion in English.
Whenever I think of my future career, I imagine myself using English.
I can imagine a situation where I am using English with fluent English users.
I imagine myself as someone who is able to use English.
The things I want to do in the future require me to use English.

Ought-to L2 Self
I study English because close friends of mine think it is important.
Learning English is necessary because people surrounding me expect me to do so.
I have to study English, because, if I do not study it, I think my parents will be disappointed with me.
My parents believe that I must study English to be an educated person.

Attitudes Towards Learning English (English Learning Experience)
I like the atmosphere of my English classes.
I always look forward to English classes.
I find learning English really interesting.
I really enjoy learning English.

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